
Directions Report

Prepared by

Institute for Sustainable Futures

For

**Natural Resources Advisory
Council**

Directions Report

*Preparation of a Discussion Paper – Opportunities
for Urban Water Conservation & Recycling in
Coastal NSW*

For Natural Resources Advisory Council

Authors:

Simon Fane, Jade Herriman and James Lewis

Institute for Sustainable Futures

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QUALITY ASSURANCE SYSTEM

Project Director's Approval of Final Report

I certify that I have:

Read the comments of the primary Reviewer(s)

☐ Yes ☐ No

Read the comments of the secondary Reviewer(s)

☐ Yes ☐ No

I agree that this report reaches the standard set by the Institute for Sustainable Futures, University of Technology, Sydney.

Signed

Institute for Sustainable Futures

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ABBREVIATIONS

BASIX	Building and Sustainability Index
BP	Best Practice
CTWSSP	Country Town Water Supply and Sewerage Program
DEC	Department of Environment and Conservation
DEUS	Department of Energy, Utilities and Sustainability
DNR	Department of Natural Resources
IPART	Independent Pricing and Regulatory Tribunal
ISF	Institute for Sustainable Futures
IWCM	Integrated Water Cycle Management
NRAC	Natural Resources Advisory Council

1 INTRODUCTION

The Natural Resources Advisory Council of NSW (NRAC) has commissioned the Institute for Sustainable Futures (ISF) to prepare a discussion paper to synthesise the key learnings and conclusions of previous work, and identify emerging opportunities for increased urban water conservation and recycling in coastal NSW.

The objective of the project is to create a Discussion Paper which explores the issues, opportunities and constraints for increased urban water conservation and recycling in coastal NSW. This will focus discussion on the steps various stakeholders can take to deliver or encourage water conservation outcomes and ensure a more sustainable water future in the urban context; and will be suitable for use in stakeholder dialogue on this significant and increasingly urgent question.

The objective is to inform current discussions about urban water provision in the coastal communities of NSW and increase awareness of the options available to Government and communities up and down the coast. In order to capture the range of situations and the variety opportunities that exist, the discussion paper will specifically explore three regional case studies.

This Directions Report describes progress on the project to date, and is submitted in week 3 of the project schedule. It contains an overview of the **method** being used to create the Discussion Paper, a draft **analysis of the dimensions** of the issue, a draft list of **actors and influencers**, and an outline of the **regional focus** to be taken. It also contains information about the **communications** objectives for the Discussion Paper and how these will be met, as well as a list of **resources** - key sources of information that will be used in this research. This Report also aims to inform a Workshop with the project team and NRAC staff and members planned for the 20th of July 2006. To this end various points for discussion are highlighted below.

2 APPROACH & METHOD

The overarching question for consideration in the project and within the Discussion Paper is ‘What are the opportunities or barriers for urban water conservation and recycling in coastal NSW?’ The context for this research is to prompt discussion in the community, local government, utility and government sectors about how to maximize opportunities and overcome barriers. This is important for coastal regions in NSW which face increased population pressure and hence water demand, and yet have not experienced the same level of focus on the development of integrated resource plans for urban water that metropolitan Sydney has seen in recent years.

The scope of the Discussion Paper is to review, with reference to 3 regional case studies, the range of barriers and opportunities to water conservation and recycling which exist in a range of dimensions (these include the technical/physical dimension, the ecosystem and human health dimension, the community dimension, etc). The paper will provide authoritative and balanced, practical points for discussion, in a format designed to be used in targeted stakeholder consultation to be run by NRAC.

The Discussion Paper will address the relationship of different actors to these barriers and opportunities. This will highlight that the opportunities for change is shared across sectors and organisations, and include the community equally with government, industry and agencies.

In summary, the methodology for the project is as follows:

- Literature review and document analysis
- Targeted expert interviews – ‘Ground truthing’ a number of issues identified through expert verification
- Analysis and reporting on dimensions - including initial prioritising of key issues
- Identify key actors, potential actors and influencers in the urban water cycle
- Developing directions report
- First project team and NRAC staff and members workshop – to review, add to and prioritise the issues identified; to validate list of actors and influencers. Confirm approximately 20 priority issues.
- Mapping the Opportunities and Barriers considering each of the 20 or so issues against each of the actors and influencers.
- Based on the potential water savings and feasibility of the strategy, propose the top 10 or so priority strategies for water conservation and top 10 or so priority strategies water recycling in Coastal NSW.
- Develop draft discussion paper
- Second project team and NRAC staff and members – to review Draft Discussion Paper and confirm priority strategies
- Finalise discussion paper

2.1 Literature review and document analysis

The literature review and document analysis phase is collating and reviewing the key planning documents, statistical documents, guidelines and regulatory documents, as well as reports which summarise existing and proposed initiatives relating to water conservation and recycling. This phase will be completed before the first workshop.

Targeted expert interviews

Targeted expert interviews are being conducted to draw on the knowledge and experience of key identified practitioners in Local government, Utilities, State Government and relevant peak bodies. An initial set will be completed before the first workshop, but further interviews may be necessary if expert verification of new issues raised is required.

Analysing and reporting on dimensions

This step will draw on the literature and interviews to consider the issue that exist for the identified dimensions of urban water resource management in the coastal zone of NSW. An initial draft of the dimensional analysis is contained within this report and the results of the analysis will be presented to the workshop on the 20th of July.

Identify draft actors and influencers

Actors, potential actors and influencers in the urban water cycle have been identified. We have taken a perspective that starts with the water consumers and move outwards to water authorities and private water infrastructure owners and managers and then State Government and other agencies. For the purpose of the Discussion Paper, customers and infrastructure providers including Water authorities are considered as the main 'actors'.

First project team and NRAC staff and members workshop

The workshop will include key ISF technical staff and NRAC members to review,

The workshop group will be presented with:

- Approximately 30 issues identified across all dimensions and the goal will be to add to, prioritise and confirm approximately 20 priority issues
- The list of actors and influencers will to be discussed and reviewed.
- The further questions raised in this report.
- Details on the next stages in the method that lead to the final Discussion Paper.

2.2 Selection of Regions for Consideration

Initially, four regions have been chosen for review for potential as case studies. The regions are based on water supply authority boundaries. The discussion paper will examine Rous Water, Gosford-Wyong, and either Shoalhaven or Eurobodalla in more depth. The objective is to explore some of the key issues common to many coastal areas (e.g. balancing supply and demand in the context of rising population) as well as highlight the unique responses that each region is making to these challenges. Specific reference will be given to the opportunities and barriers for increased water conservation and recycling in each region.

The following gives an overview of each region and a brief explanation of why each has been chosen or is under consideration.

Rous Water

Rous Water is the regional water supply authority providing water to the Council areas of Lismore, Ballina, Byron and Richmond Valley. It serves a population of around 106,000, but this is set to rise steadily and will place a heavy burden on the water supply.

Currently, the principal source of the supply network is Rocky Creek Dam, which has storage capacity of 14,000 mega litres. Other available sources include Emigrant Creek Dam (820 mega litres) and five bore areas. To increase short-term supply, the authority plans to extract water from the Wilson River, while longer-term it is seeking to develop a dam at Dunoon.

Since 1996, Rous water has been implementing the Rous Regional Demand Management Strategy. A revised 5-year water management plan was adopted in March 2004. The Plan offers a range of ongoing educational programmes and financial incentives designed to reduce water demand. For example, new developments (such as Perradenya) are designed to encourage water recycling and re-use and effective pricing policy provides funds to augment supply and reduce demand.

Why use Rous as a case study?

- The region is experiencing **population growth** which increases pressure on its water supply
- It has an **existing Demand Management Plan** which can be evaluated
- From an **institutional perspective**, several councils operate across the water authority

Gosford-Wyong Councils' Water Authority

Gosford City and Wyong Shire councils are each designated as Water Supply Authorities and share joint responsibility for water supply headworks through the Gosford-Wyong Councils' Water Authority which operates dams and treatment facilities for improving, conserving and supplying water. This is a largely advisory body without jurisdictional powers. The individual councils manage all aspects of the distribution systems within their own areas, but the Authority becomes involved where water is transferred between the two Councils.

The joint system serves a current urban population of 285,000 people but this is projected to rise to approximately 350,000 by 2020. The water supply demand in 2001 was 33,270 megalitres, but this is predicted to rise to above 40,000 megalitres per year by 2020.

Current principle supply sources are three weirs and three dams, plus two water treatment plants. To ensure a secure future water supply, several contingency plans are being investigated and a long-term plan (WaterPlan) 2050 is being compiled. One option under consideration is a desalination plant which would provide up to 20 million litres of drinking water per day. Other strategies include tapping into the existing groundwater supplies, enhancing the transfer system from the Hunter, reclaiming and recycling wastewater and improving the efficiency of the existing water supply.

Why use Gosford-Wyong as a case study?

- A unique **regulatory system** exists with Gosford-Wyong falling under the jurisdiction of both the Department of Energy Utilities and Sustainability (DEUS) and the Independent Pricing and Regulatory Tribunal (IPART).
- This region is experiencing fast population growth and has severe concerns over its **ability to supply sufficient water in the longer-term**
- The region is considering construction of a **desalination plant**

Shoalhaven Water

Shoalhaven Water is a division of Shoalhaven City Council. Shoalhaven City has a current (projected) population of 95,438. It covers 4660 square kilometres (stretching from Broughton, southwards to North Durras) and an estimated 1,000km of coastline. Water consumption for 2003/4 was 17,419 megalitres with average annual household consumption at 216 kilolitres per property. The Shoalhaven River is the region's main water supply, but its flow is currently too low to allow extraction.

Several water saving projects are being investigated and implemented. The innovative REMS (REclaimed Water Management Scheme) project is being developed in two stages and will use up to 80% of reclaimed water from six sewage treatment plants to irrigate playing fields, golf courses and agricultural land. In the first three and a half years of the scheme, over 5,100 megalitres (65% of water managed) have been recycled onto land.

Further initiatives are also being implemented, such as ongoing community engagement and adoption of a Best Practice Pricing policy.

Why use Shoalhaven as a case study?

- It operates as a water and wastewater authority covering a single council
- The REMS project aims to reuse 80% of **reclaimed water** – an ambitious target

Eurobodalla

Eurobodalla Shire Council serves 35,000 people and serves the main towns of Batemans Bay, Moruya and Narooma on the South Coast of NSW.

Eurowater administers water services for the shire and is a division of the council. Water supply is drawn from three mountain-fed rivers, the Buckenboursa, the Deua and the Tuross. Deep Creek Dam (capacity 4900 ML) is maintained as a drought or emergency storage system should the rivers become unavailable for extraction. The Council operates five tertiary sewerage plants in the shire to treat waste water.

Several initiatives are in place to conserve water, including permanent level 3 restrictions and cash incentives, such as rebates for rainwater tanks and free shower heads. It also has a 30-year Integrated Water Cycle Management (IWCM) strategy in place, which details short and long-term opportunities for developing regional supply sources, alternative supply sources, opportunities for reclaimed water, and integrated options.

Why use Eurobodalla as a case study?

- It also operates as a **single, council-owned water and wastewater entity**
- It is the first Water Authority to develop an full **IWCM strategy**

For discussion: The NRAC Advisory Group is invited to reflect on which of the two Southern regions – ***Eurobodalla or Shoalhaven Water*** – will be most useful for inclusion as a case study in the Discussion Paper?

2.3 Draft Analysis of Dimensions

Numerous issues in relation to the question ‘What are the opportunities or barriers for urban water conservation and recycling in coastal NSW?’ are revealed through the research process can be grouped into the following dimensions:

1. Ecosystems and human health
2. Technical and physical
3. Institutions
4. Economics and financial arrangements
5. Organisational capacity
6. Community

Issues exist within each dimension. These issues may also be framed as opportunities and barriers to increased water conservation and recycling.

The following is a snapshot of the initial analysis of priority issues identified within each dimension. This dimensions analysis is ongoing, and to date has been informed primarily by the review of literature. This will be updated through the targeted technical interview process. Any subsequent findings that emerge between the submission of this Directions Report and the holding of the first NRAC Advisory Group Workshop will be brought to the workshop for discussion.

2.3.1 Ecosystems and human health

<i>Topic</i>	<i>Issue</i>
<i>River Health</i>	Are river health issues in the region related to water taken for urban supply or water quality due to urban run off?
<i>Effluent disposal</i>	Is effluent disposal causing a major impact to freshwater, marine or estuarine environments in the region?
	Is the long term sustainability of land based effluent reuse an issue in the region?
	Are new outfalls or significant augmentations being proposed?
<i>Potential health risks to humans from use of recycled water</i>	Is the risk to human health being adequately managed in existing non-potable reuse schemes?
	Would potable recycling represent a health risk due to inadequate management?
<i>Health concerns with current effluent disposal</i>	Are there existing health issues related to effluent disposal or on-site treatment systems?

2.3.2 Technical and physical

<i>Topic</i>	<i>Issue</i>
<i>Current water supply capacity</i>	How does existing supply compare with existing demand? What role have restrictions played in balancing supply and demand?
<i>Water conservation effort</i>	What is the nature and extent of existing and proposed water conservation programs by Water Supply Authorities?
<i>Sewers, wastewater treatment and disposal</i>	Do exist sewage system failings with significant infiltration and ingress leading to overflow in wet weather; holiday peak in sewage above capacity; saltwater ingress?
<i>On-site and in-building re-use</i>	With new technology, is there potential for small on-site and in-building reuse schemes to significantly increase recycling?
<i>Appropriate system scale</i>	With new technology, is there potential for decentralized wastewater system to provide cost effective sewerage to urban areas and provide for recycling?

2.3.3 Institutions

<i>Topic</i>	<i>Issue</i>
<i>Recycled water guidelines</i>	Are the draft national guidelines currently too difficult for local authorities and councils to use? Are NSW Health's 'Interim Guidance on Greywater and Sewage Recycling in Multi-Unit Dwellings and Commercial Premises' and 'Greywater Reuse in Sewered Single Domestic Premises' of value for local authorities and councils? How clear is the guidance for effluent irrigation and could it be improved?
<i>Planning regulation</i>	How will BASIX impact in coastal NSW to promote water conservation and recycling? Can regional planning processes underway impact in coastal NSW to promote water conservation and recycling?
<i>DEUS' IWCM and BP guidelines</i>	Are IWCM and BP guidelines acting to shift practice in relation to water conservation and recycling? Are the tools available within the IWCM acting to optimize water conservation and recycling outcomes? Despite being a backward step in terms of integrated planning, pragmatically would specified water conservation targets in operating licenses for coastal Water Authorities (like Sydney Water's) be a more effective in promoting water conservation outcomes?
<i>DEUS and DEC's roles in water conservation in the non-residential</i>	How can DEUS' Water Conservation Plans and Water Saving Fund

<i>sector</i>	<p>apply beyond the Sydney metropolitan region?</p> <p>What is DEC now doing in relation to funding cleaner production (through the Business Partnerships program) and can this be used to influence the non-residential sector into contributing to better water conservation and recycling outcomes in coastal NSW ?</p>
<i>DNR licensing of extraction</i>	Is the fact that some effluent returned to rivers is already allocated to other users (such as agriculture) acting as an impediment to more formal recycling systems?
<i>Third party asset access and management</i>	<p>Is there a potential for significant private – third party - investment in water recycling? Are there companies and is there a potential market?</p> <p>Is there a potential for significant third party ownership and management of decentralised recycling systems?</p>

2.3.4 Economics and financial arrangements

<i>Topic</i>	<i>Issue</i>
<i>Pricing and developer contributions</i>	Is the current low price of potable water a major disincentive to water conservation and is it likely to change?
<i>Recycled water pricing</i>	Is recycled water being paid for at a rate that recovers costs? And is this a significant disincentive to future investment?
<i>Role of CTWSSP</i>	Does the CTWSSP aim to promote conservation/demand management or recycling? Is it acting as a barrier to moving from conventional servicing? How can it be improved?
<i>Foregone revenue due to conservation reducing water sales</i>	Is this acting as a barrier to Water Authorities conducting more conservation programs?
<i>Cost of conservation & recycling</i>	Is the cost of water conservation and recycling seen as too expensive compared to costs of new supply?

2.3.5 Organisational capacity

<i>Topic</i>	<i>Issue</i>
<i>Population growth rates</i>	What is the population growth projected for coastal NSW over next 25 years? For each of the case study regions? To what extent is this growth viewed as an opportunity for significant water conservation and recycling?
<i>Split responsibilities across water cycle</i>	Does the split responsibilities for water supply, wastewater and stormwater hamper and integrated response across the urban water cycle?
<i>Organizational capacity</i>	Is there any organizational capacity (reflected in the structure) to increase water recycling and conservation? Is suitably qualified and experienced technical staff available?
<i>Knowledge and skills</i>	Does a lack of knowledge and skills pose a barrier to increased water conservation and recycling?

Community engagement

Is there sufficient aptitude for/experience with community engagement in the water industry?

2.3.6 Community

*Topic**Issue**Willingness to pay*

Is there a willingness to pay more for potable water, pay the cost of recycled water and invest in water conservation when it is cost effective?

Willingness to accept

Is there a willingness to accept further demand management; existing and further restrictions; recycled water; potable recycling?

Capacity to conserve/ recycle water

What is the current level of consumption, recycling and conservation in each region? What proportion of water use is discretionary and what is a basic necessity?

Engagement in urban water issues

Is there an interest from the community to be involved in urban water issues and be part of a shift to greater water conservation and water recycling?

What structures would facilitate meaningful involvement in urban water resource management by the community?

2.3.7 Actors and influencers

The opportunity for enhancing water conservation and recycling exists with various actors and potential actors across the urban water cycles of coastal NSW. Whilst the State Government and Water Authorities will continue to play an important role in urban water resource management the potential exists for other stakeholders to take an increasing role in moves towards sustainability.

The identified actors and potential actors in the urban water cycles of coastal NSW have been grouped as:

- i. Residential water consumers;
- ii. Commercial consumers (including retail and private offices etc);
- iii. Institutional consumers (government facilities including schools, local council offices, hospitals etc);
- iv. Commercial and multi- residential building developers and managers;
- v. Industry consumers (both light and heavy industries)
- vi. Urban landscape managers (including councils with playing fields and golf courses) involved in irrigation. This covers current and possible urban reclaimed water customers;
- vii. Current and possible peri-urban users of reclaimed water including agriculture;
- viii. Potential private water infrastructure owners and managers, particularly in relation to small-scale recycling systems and in-building reuse systems;
- ix. Water supply authorities.

For discussion:

The NRAC Advisory Group is invited to reflect on whether all the key issues are represented (examine for each dimension)

Each of these groups faces specific impediments and opportunities for water conservation and recycling. Using perspective of these actors as a critical lens, the barriers need to be removed and incentives provided for them conserve and recycled more water will be assessed.

The principle influencers of activities in the urban water cycles of coastal NSW are the State and Local Governments through their agencies and authorities. DEUS in particular plays a critical role. Other influences include National agencies such as the Environment Protection and Heritage Council and the Natural Resource Management Ministerial Council which have produced Draft National Recycling Guidelines and the National Water Initiative which is providing funding for individual projects and has the goal of producing guidelines for water sensitive urban development in Australia.

Also of influence or potential influence are community and environment groups which when empowered can promote more sustainable outcomes for urban water resource management and pressure both actors and other influencers.

2.4 Focus on communications

For discussion:

Are there any key actors or influencers missing?

The discussion paper is not designed merely for internal use by the members of NRAC but is specifically intended to be a tool to trigger discussion amongst stakeholders in the wider community. The Discussion Paper will either be distributed in full or used by NRAC and workshop organizers as content material for targeted communications materials (such as a brochure) for the community consultation process.

To ensure that the discussion paper meets these communications objectives, specific consideration will be given to readability and methods of presenting information.

Our aims:

- To make the discussion paper as user-friendly and interesting as possible
- To create a clear logical structure and lay-out to the discussion paper
- To be cognisant of how the user is likely to want to use the discussion paper (e.g. highlight specific questions for discussion, provide snapshots of key findings)

Factors and actions to help achieve these aims:

- Appropriate language

- Accessible as possible
- Use maps and diagrams where appropriate
- Differentiate different types of information through different presentation formats (eg boxes, shaded and unshaded, different typeface/font/colour).

- Think about the audience
 - Consider the possible range of reader's level of prior knowledge in each area
 - Appeal to different styles of learning (some people learn best through examples, others through logic, others through diagrammatic representation, and others through summary tables) and therefore use as much variety as possible in presentation formats
- Use learning strategies and devices effectively
 - Use the case studies as 'stories' with some details of their context so that reader's can grasp them quickly and easily- make them as tangible and real as possible. Explain aspects like why something was done, so what? Why it is important.
 - Avoid long sections of solid text - consider what aspects might be better and more easily presented as diagrams or break-out boxes and create such diagrams/pictures if necessary

2.5 Key sources of information

The discussion paper will draw on a combination of technical reports, policy papers and academic papers relating to both coastal water use, conservation and recycling in NSW in general, and in each of the 3 regions selected in particular. The current list of references being reviewed is attached in **Appendix 1**.

In addition to reviewing written texts, some targeted interviews with key experts are being conducted. These are designed to draw on the knowledge and experience of key practitioners in local government, utilities, state government and relevant peak bodies. Interview participants have been selected based on particular areas of interest and existing networks and relationships. The approach to technical interviews is outlined in **Appendix 2**.

For discussion:

The NRAC Advisory Group is invited to reflect on these lists and recommend any key additional texts or interview contacts for consideration.

APPENDIX 1 – LIST OF REFERENCE MATERIAL FROM WHICH KEY PAPERS WILL BE REVIEWED

ACIL Tasman (2005) *Institutional Arrangements in the Australian Water Sector*

ACIL Tasman (2004) *Pricing for Recycled Water* A report for WSAA

Anderson, J. (2003) *The Environmental Benefits of Water Recycling and Re-use* Water Science and Technology: Water Supply Vol 3 No. 4 pp 1-10 IPA Publishing: NSW (presents case studies examining water re-use and benefits arising)

ACT Commissioner for the Environment (2004) *State of the Environment Report, Eurobodalla Drinking Water Quality*,

ACT Commissioner for the Environment (2004) *State of the Environment Report, Eurobodalla Water Use*,

Australian Government Water Fund (2005) *Community Water Grants*

Australian Water Association, (2005) *Inquiry into Infrastructure Provision In Coastal Growth Areas*, NSW Legislative Assembly Standing Committee on Public Works

Butler, D. & Ali Memon, F. (2006) *Water Demand Management* IWA: London

Clearwater, *What is Best Practice in Water Conservation? Tips for Councils*

DEC (2006) *Managing Urban Stormwater: Harvesting and Reuse* DEC: Sydney South

DEC (2004) *Environmental Guidelines: Use of Effluent by Irrigation* DEC: Sydney South

DEUS (2003) *Best Practice Management of Water Supply and Sewerage: Guidelines* DEUS: Sydney

DEUS (2003) *Kempsey Integrated Water Cycle Management Strategy: Part 1 concept Study* DEUS: Sydney

DEUS (2003) *Kyogle Integrated Water Cycle Management Strategy: Part 1 concept Study* DEUS: Sydney

DEUS (2004) *Integrated Water Cycle Management Guidelines for NSW Local Water Utilities* DEUS: Sydney

DEUS (2004) *ICWM Scope of Works*

DEUS (2005) *Country Towns Water Supply and Sewerage Program*

Diaper, C. (2004) *Innovation in on-site domestic water management systems in Australia: A review of rainwater, greywater, stormwater and wastewater utilisation techniques* (CSIRO)

DLWC (1998) *Water Sharing the way forward: Overview of the NSW Water Initiatives* NSW DLWC: Sydney

DPWS (2003) *Eurobodalla Integrated Water Cycle Management Strategy*

DNR (2006) *An Introduction to Water Management* DNR: Sydney

- Edgerton, N. & Mitchell, C. (2006) *Seeing the Forest and the Trees: a framework for directing sustainable urban water action Paper* presented at Enviro 06
- Emrath, P. (2000) *Residential Water Use* Housing Economics vol 48, no. 6
- Hatton Macdonald, D. (2004) *The Economics of Water: Taking Full Account of First Use, Reuse and Return to the Environment*
- Eurobodalla Shire Council (2005) *Development Servicing Plan for Water Supply Services Draft*
- Eurobodalla Shire Council and DLWC (2003) *Council Briefing Paper: Eurobodalla Integrated Water Cycle Management Strategy*
- Gosford City Council, Central coast, Wyong Shire council (2005) *Water Management Plan Guidelines*
- Hatton Macdonald, D. & Dyack, B. (2004) *Exploring the Institutional Impediments to Conservation and Water Reuse - National Issues* (CSIRO)
- Healthy Rivers Commission (2003) *North Coast rivers: Independent Inquiry into the North Coast rivers*
- Herbert, R. & Workman, G. (2004) *Review of National & State Plumbing Codes to facilitate Domestic Water Reuse*
- HRC (2003) *Independent Inquiry into the North Coast Rivers* HRC: Sydney
- Hunter Water *Integrated Water resource Plan*
- ICI Subgroup: New Mexico Water Conservation Alliance (2004) *Industrial, Commercial and Institutional Water Conservation*, Prepared for New Mexico Drought Task Force Drinking Water Work Group
- IPART (2000) *Developer Charges from 1st October 2000*
- IPART (2006) *Recycled Water prices for Sydney Water Corporation, Hunter Water Corporation, Gosford City Council and Wyong Shire council*
- IPART (2005?) *Investigation into Water and Wastewater Service Provision in the Greater Sydney region*
- Kellogg, Brown & Root (2004) *Metropolitan Adelaide Stormwater Management Study Part B – Stormwater Harvesting and Use*
- Mackenzie, P (2005) *Review of the Country Towns Water Supply and Sewerage Program: The Need to Restore Funding*
- Micromex Research (2004) *Community Consultation Wyong North*
- Mitchell, V. (2004) *Integrated Urban Water Management: A review of current Australian practice* (CSIRO)
- Natural Resource Management and Heritage council (2005) *National Guidelines for Water Recycling: Managing Health and Environmental Risks*
- National Competition Council (2004) *Application by Services Sydney for Declaration of Sewage Transmission and Interconnection Services provided by Sydney Water: final Recommendation*

NSW EPA/Codd Inquiry (1997) *Public Inquiry into the Management of Sewage and Sewage By-products in the NSW Coastal Zone: Final Report* NSW EPA: Sydney

NSW Health (2000) *Greywater Reuse in Sewered Single Domestic Premises*

NSW Recycled Water Co-ordination Committee (1993) *NSW Guidelines for Urban and Residential Use of Reclaimed Water* RWCC: Sydney

Perkins, P. & McRae, B. *Sustainable Urban water systems*

Po, M., Kaercher, J. and Nancarrow, B. (2004) *Literature Review of factors influencing public perceptions of water re-use* (CSIRO)

Prime Minister's Science, Engineering and Innovation Council (2003) *Recycling Water for our Cities*

Radcliffe, J (2004) *Water Recycling in Australia* [For AATSE]

Ross, V. *The Role of Trust on Community Acceptance of Urban Water Management Strategies*

Russell Kennedy (2004) *The reclaimed Water Agreement Manual*

Samra, S. & Maclean, C. (2005) *2003/4 NSW Water Supply and Sewerage Benchmarking Report* (for DEUS)

Smith, S. (2004) *The Future of Water Supply* [Accessed 28/3/06 www.parliament.nsw.gov.au/prod/parliament/publications.nsf]

Standen, R. (2000) *Developing Irrigation Guidelines for Wastewater Irrigation* Paper presented at 63rd Annual Water Industry Engineers and Operators Conference

Strachan, W. & Anderson, J. (2003) *Sustainability in Water Management: Challenges and Innovative Solutions* Paper presented at IPAA NSW State conference

Sydney Water (2001) *Development Servicing Plan: Rouse Hill Recycled Water System*

Sydney Water (2003) *Community Views on Sustainable Water Resources*

Tomkinson, B. (2002) *Shoalhaven Reclaimed Water Management Scheme (REMS)*, IPWEA NSW Division Annual Conference 2002

Toze, S. (2004) *Literature review on the Fate of Viruses and Other Pathogens and Health Risks in Non-Potable Reuse of Storm Water and Reclaimed Water* (CSIRO)

Troy, P. & Randolph, B. (2006) *Water consumption and the built environment: a social and behavioural analysis* City Futures Research Centre: Sydney

UMR Research (2005) *Community Attitudes to Water Supply in Sydney: Quantitative Report* Prepared for NSW Government Sydney

Unkovich et al. (2004) *Impacts on crop quality from irrigation with water reclaimed from sewage* (CSIRO)

White, S. & Campbell, S. (2002) *Integrated Water Service Provision: Opportunities and Implications on the NSW North Coast* For the Healthy Rivers Commission ISF: Sydney

White, S. (1998) *Wise Water Management: A Demand Management Manual for Water Utilities* WSAA: Sydney

APPENDIX 2 – CURRENT LIST OF INTERVIEWEES

Organisations

- DEUS
- Nature Conservation Council
- LGSA
- Gosford City Council
- Byron Shire / Lismore Council
- Eurobadalla – Eurowater
- Shoalhaven Water
- NSW Water Directorate
- AWA NSW
- Hunter Water Corporation
- Rous Water / ISF staff re Rous Water

Note that the contact details of the individuals interviewed will not be contained in the Discussion Paper, as confidentiality is a key feature of the interview process, and in some instances may allow for more frank and open discussion.